**FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST 6110**

**Sharp Laboratories of America, Inc.**

**January 2010**

## SUMMARY

### PURPOSE of this Fact Sheet

This fact sheet explains and documents the decisions Ecology made in drafting the proposed State Waste Discharge permit for Sharp Laboratories of America, Inc. (SLA) that will allow the discharge of wastewater to the city of Camas Publically Owned Treatment Works (POTW).

State law requires any industrial facility to obtain a permit before discharging waste or chemicals to waters of the state. This statute includes commercial or industrial discharges to sewerage systems operated by municipalities or public entities which discharge into waters of the state.

A State Waste Discharge permit limits the types and amounts of pollution the facility may discharge. The Department of Ecology (Ecology) bases those limits either on (1) the pollution control or wastewater treatment technology available to the industry, or on (2) the effects of the pollutants to the POTW (local limits).

### PUBLIC ROLE in the Permit

Ecology makes the draft permit and fact sheet available for public review and comment at least 30 days before we issue the final permit to the facility operator. Copies of the fact sheet and draft permit for Sharp Laboratories of America, Inc. (SLA), State Waste Discharge permit ST 6110, are available for public review and comment from insert month day, year until the close of business month day, year) For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement**.

Before Ecology published the draft State Waste Discharge permit, Sharp, reviewed it for factual accuracy. Ecology corrected any errors or omissions about the facility's location, product type or production rate, discharges or receiving water, or its history.

After the public comment period closes, Ecology will summarize substantive comments and our responses to them. Ecology will include our summary and responses to comments to this Fact Sheet as **Appendix** D - **Response to Comments**, and publish it when we issue the final State Waste Discharge permit. The rest of the fact sheet will not be revised, but the full document will become part of the legal history contained in the facility's permit file.

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## I. INTRODUCTION

The legislature defined Ecology's authority and obligations for the wastewater discharge permit program in 90.48 RCW (Revised Code of Washington).

Ecology adopted rules describing how it exercises its authority:

- State Waste Discharge Program (Chapter 173-216 Washington Administrative Code [WAC])
- Submission of Plans and Reports for Construction of Wastewater Facilities (Chapter 173-240 WAC)

These rules require any industrial facility operator to obtain a State Waste Discharge permit before discharging wastewater to state waters. This rule includes commercial or industrial discharges to sewerage systems operated by municipalities or public entities which discharge into public waters of the state. They also help define the basis for limits on each discharge and for other performance requirements imposed by the permit.

Under the State Waste Discharge permit program and in response to a complete and accepted permit application Ecology must prepare a draft permit and accompanying fact sheet, and make it available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments, during a period of thirty days. (See **Appendix A--Public Involvement** for more detail about the Public Notice and Comment procedures). After the Public Comment Period ends, Ecology may make changes to the draft State Waste Discharge permit in response to comment. Ecology will summarize the responses to comments and any changes to the permit in **Appendix D.**

**Table 1 - General Facility Information**

| | |
|---|---|
| Applicant: | Sharp Laboratories of America, Inc. (SLA) |
| Facility Name and Address: | Sharp Laboratories of America, Inc.<br>5700 NW Pacific Rim Blvd.<br>Camas, Washington 98607 |
| Type of Facility: | Research and development facility in the areas of multimedia, integrated circuits, and liquid crystal display-thin film transistor technologies. |
| SIC Code | 8731 |
| Facility Location: | Latitude: 45.595556<br>Longitude: 122.388056 |
| Treatment Plant Receiving Discharge | City of Camas Publically Owned Treatment Works (POTW). |
| Contact at Facility | Name: Charley Stanton<br>Telephone #: 360-834-8783 |
| Responsible Official | Name: Jack Van Oosterhout<br>Title: President, Sharp Laboratories of America |

**Figure 1. Facility Location Map**


## II. BACKGROUND INFORMATION

### A. Facility Description

The Sharp Labs of America, Inc. (SLA) is a significant industrial user (SIU) based on its request to discharge 35,500 gallons per day (gpd) of industrial wastewater, 40 Code of Federal Regulations (CFR) 403.3. SLA uses processes that generate industrial wastewater similar to those in semiconductor industry, which is subject to categorical effluent limitations (40 CFR 469). Because SLA is a research and development facility the categorical standards do not apply and SLA is not a categorical industrial user (CIU). Previously Ecology determined that the categorical effluent limits met the requirements for AKART[1].

Integrated Circuit (IC) Process Technology Labs (1, 2, and Synthesis)

These labs perform research and development (R&D) related to various processes and chemicals used in the development of integrated circuits. Basic processes, chemicals, and equipment are those found in a typical wafer or IC manufacturing facility; however the volume is very low, as one would expect in R&D. The facility funds projects on a contract basis with Japan and projects last from as little as 90 days to

[1] The acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART is a technology-based approach to limiting pollutants from wastewater discharges which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

many months. The only product created is intellectual property for which the facility seeks and receives patents.

Liquid Crystal Display (LCD) Process Technology Lab

This lab performs research and development related to various processes and chemicals used in the development of LCDs. Basic processes, chemicals, and equipment are those found in a typical LCD manufacturing facility; however R&D is limited to only the thin film transistor (TFT) or TFT portion of a completed LCD device. Again, volume is very low, as one would expect in R&D. The facility funds projects on a contract basis with Japan and projects last from as little as 90 days to many months. The only product created is intellectual property for which the facility seeks and receives patents.

Other

In addition to the process groups mentioned above, the facility generates some wastewater by basic facilities maintenance and janitorial cleaning services.

**History**

SLA is a wholly owned subsidiary of Sharp Electronics Corporation (SEC) in Mahwah New Jersey. SLA operates at the Camas, Washington location which is owned by SEC. The property was transferred to SEC in April of 1999 when Sharp Microelectronics Technology, Inc. closed. SLA assumed responsibility for the functions and operations which generate wastewater and the State Waste Discharge Permit at that time.

SLA operates in parts of three buildings on the Camas site. Sharp Microelectronics of the Americas, a division of SEC, occupies most of the area in both the 1990 vintage 102,000 $ft.^2$ building and the 1993 vintage 56,000 $ft^2$ building; however SEC rents space in both buildings to SLA for its operations. SLA owns and occupies a third 54,000 $ft^{-2}$ building constructed in 1996.

SLA conducts R&D in the areas of multimedia (e.g. video, imaging, telecommunications, software, copiers, printers, etc.), ICs, and LCD-TFT technologies. SLA does no manufacturing; the main product is intellectual property and patents resulting from R&D activities. Only the IC and LCD laboratories generate wastewater. SLA conducts lab operations in small "clean rooms" using equipment and processes which are consistent with those used by companies who manufacture such devices. Examples include photomasking, stripping, etching, chemical, metal organic, and physical vapor deposition, rinsing and drying of wafers and LCD glass.

The IC laboratory, consisting of two clean rooms and a chemistry lab, occupies about 8700 $ft^{-2}$. SLA personnel conduct research and analysis of various process techniques and materials for improving IC design, efficiency, size, and speed in the IC lab. This work is done using whole wafers, no working IC devices are created.

The LCD laboratory consists of one clean room occupying about 6000 $ft^2$. SLA conducts research and analysis of various process techniques and materials for improving LCD TFT design, efficiency, size, and speed in the LCD lab. A complete LCD device consists of two glass panels and a polarizer with liquid crystal injected between them. The lab only performs research on the glass panel having the transistors. The second glass panel, polarizers and liquid crystal equipment and processes are not present; therefore the facility does not create any working LCD devices.

SLA employs approximately 250 people, most of them in offices.

**Industrial Wastewater Generation**

SLA generates the majority of its wastewater from air pollution control (air scrubber) equipment. It generates some additional wastewater from rinsing, etching, stripping, cleaning, anodic oxidation, polishing, and reverse osmosis processes.

Cleaning, etching, stripping, anodic oxidation and polishing processes utilize chemicals such as polishing slurry, sulfuric acid, phosphoric acid, hydrogen peroxide, ammonium hydroxide, ammonium tartarate, ammonium fluoride, and hydrofluoric acid. The photodeveloping stations use tetramethylammonium hydroxide which is a surfactant containing alkaline solution. Deionized water is used for all processes and rinsing, except for air scrubbing. Reverse osmosis and ion exchange are used to deionize the water. The above wastewater and concentrate from the deionization process enters the sanitary sewer via the neutralization treatment tank.

The photographic process for both IC and LCD processes consist of several rinses with deionized water. SLA combines the rinse water from these processes with the wastewater streams and neutralizes the pH, if necessary, prior to discharge to the sanitary sewer. The facility separates and collects the first rinse and high strength waste from etching and cleaning operations using hydrofluoric acid for treatment at an offsite hazardous waste facility.

Three air scrubbers are located on the roof or ground (one for each lab and one for the gas storage area). The air scrubbers treat exhaust from fume hoods, benches and any tools which use or generate corrosive emissions. The IC scrubber generates about 86 gpd, the LCD scrubber generates about 43 gpd and the gas pad scrubber only generates wastewater in the event of an emergency (e.g. leak from a gas bottle). SLA estimates it would generate about 100 gallons. The air scrubbers run 24-hours per day to maintain static pressure in the clean rooms and to provide control in the event of an emergency leak or spill. SLA routes the wastewater generated from the scrubbers to the pH neutralization tanks (one in each lab) prior to discharge to the sanitary sewer.

The facility listed details of processes generating industrial wastewater and estimated volumes/flows in the permit application.

SLA currently monitors flow by recording the final process wastewater volume at each pH treatment tank. The individual process flows are sporadic, as is the nature of R&D, and therefore not measured directly. Flows from the emergency and IC scrubbers are batch while the LCD scrubber currently flows continuously. SLA does not measure scrubber flows and RO/DI reject water flows individually but include them in the combined total flow from each lab.

**Table 2 – Chemical stored at SLA with use and quantities reported in the application.**

| Chemical Name | Use | Quantity[2] |
|---|---|---|
| Benzene | Solvent – Synthesis Laboratory | 4 liters (L) |
| Carbon Tetrachloride | Solvent – Synthesis Laboratory | 1 L |
| Chloroform | Solvent – Synthesis Laboratory | 2 L |
| Chromic Acid | Laboratory glassware cleaning | 400 grams (g) |
| Copper (I) Acetate | Precursor for chemical formulations or synthesized chemicals | 200 g |
| Copper (I) Chloride | Precursor for chemical formulations or synthesized chemicals | 500 g |
| Copper (I) Oxide | Precursor for chemical formulations or synthesized chemicals | 500 g |

[2] Quantities represent maximum storage amounts.

| Chemical Name | Use | Quantity[2] |
|---|---|---|
| Copper Phthalocyanine | Precursor for chemical formulations or synthesized chemicals | 100 g |
| Lead Acetate | Precursor for chemical formulations or synthesized chemicals | 500 g |
| Lead Chloride | Precursor for chemical formulations or synthesized chemicals | 500 g |
| Lead Powder | Precursor for chemical formulations or synthesized chemicals | 500 g |
| Mercury | Vacuum line argon gas bubbler | < 5 g |
| Methylene Chloride | Precursor for chemical formulations or synthesized chemicals | 1 L |
| Nickel Acetate Tetrahydrate | Precursor for chemical formulations or synthesized chemicals | 200 g |
| Selenium | Thin film deposition | 500 g |
| Silver Chloride | Precursor for chemical formulations or synthesized chemicals | 500 g |
| Silver Oxide | Precursor for chemical formulations or synthesized chemicals | 500 g |
| Silver Paste | Precursor for chemical formulations or synthesized chemicals | 100 g |
| Toluene | Solvent – Synthesis Laboratory | 8 L |
| Zinc Acetate | Precursor for chemical formulations or synthesized chemicals | 200 g |
| Zinc Nitrate | Precursor for chemical formulations or synthesized chemicals | 500 g |

**Table 3 – Chemical stored at SLA with quantities reported in the application.**

| Chemical Name | Quantity |
|---|---|
| Acetone | 10 gallons |
| Diesel Fuel | 350 gallons |
| Edge Base Remover | 4 gallons |
| Ethyl Alcohol | 10 gallons |
| Isopropyl Alcohol | 10 gallons |
| Methyl Alcohol | 10 gallons |
| N-Methyl Pyrrolidone | 10 gallons |

**Table 4 – Other chemical used at SLA.**

| Chemical Name | Formula |
|---|---|
| Acetic acid | $C_2H_4O_2$ |
| Ammonium fluoride | $NH_4F$ |
| Ammonium hydroxide | $NH_4OH$ |
| Chromic acid | $H_2CrO_4$ |
| Cupric nitrate | $Cu(NO_3)_2*3H_2O$ |
| Ferric chloride | $FeCl_3$ |
| Hydrochloric acid | HCl |
| Hydrofluoric acid | HF |
| Hydrogen peroxide | $H_2O_2$ |
| Nitric acid | $HNO_3$ |
| Phosphoric acid | $H_3PO_4$ |
| Potassium hydroxide | KOH |
| Sodium hydroxide | NaOH |
| Sulfuric acid | $H_2SO_4$ |
| Zinc nitrate | $Zn(NO_3)_2$ |

The application lists additional chemicals used at SLA.

**Industrial Wastewater Pretreatment**

Spent solvents are collected, contained and removed to a hazardous waste management facility. The proposed permit prohibits discharge of spent solvents with the wastewater. Further, the facility separates and collects the first rinse and high strength waste from etching and cleaning operations using hydrofluoric acid at a fluoride main accumulation tank for treatment at an offsite hazardous waste facility. SLA has measured low concentrations of fluoride in the second and third rinses which the facility does not treat to remove fluoride. The facility collects fluoride samples at the point of industrial wastewater discharge to the city of Camas POTW. SLA separates and collects any other concentrated wastes for treatment at an offsite hazardous waste facility.

The industrial wastewater is adjusted for pH only. The existing pH treatment systems are a combination of batch and continuous flow. If the water is within required pH specifications it continuously discharges to the sanitary sewer. If however the pH probes detect a level outside of specification, the final valve closes and the water is automatically treated with sulfuric acid or sodium hydroxide until the proper pH is achieved. The valve then opens to release the wastewater to the sanitary sewer. The treatment system for the IC lab consists of series of five tanks holding a total of 1,144 gallons while the treatment system for the LCD lab consists of a series of three tanks holding 990 gallons. SLA continuously monitors and records the final pH.

**Discharge Location to the city of Camas**

Industrial wastewater is collected and adjusted for pH at the IC lab acid waste neutralization (AWN) tanks or LCD AWN tanks. SLA monitors the commingled industrial wastewater before mixing it with SLA sanitary sewage; then discharges it to the municipal sewer system and the city of Camas POTW.

**Solid Wastes**

There is no solid waste generated during the treatment processes in the AWN tanks.

**B. Permit Status**

Sharp submitted an application for permit renewal on December 19, 2006. Ecology accepted it as complete on March 23, 2007.

Ecology issued the previous permit for this facility on July 16, 2003. The previous permit placed effluent limits on flow, fluoride, total toxic organics (TTO) and pH.

**C. Summary of Compliance with Previous Permit Issued**

Ecology staff last conducted a non- sampling compliance inspection on September 30, 2009.

Sharp has complied with the effluent limits and permit conditions throughout the duration of the permit issued on July 16, 2003; except that it exceeded the fluoride permit limits in June 2004, Table 5**.** Sharp immediately investigated and corrected the problem. A report was sent to Ecology on July 1, 2004. Ecology assessed facility compliance based on its inspections and its review of the facility's Discharge Monitoring Reports (DMRs).

**Table 5 - Summary of compliance**

| Monitoring Parameter | Units | Sample Value | Permit Requirement |
|---|---|---|---|
| Fluoride, monthly average | milligrams per liter (mg/L) | 19 | 17.4 |
| Fluoride, monthly average | mg/L | 45 | 32 |

**D. Wastewater Characterization**

SLA reported the concentration of pollutants in the State Waste Discharge application (Table 6) and in discharge monitoring reports (DMRs). The tabulated DMR data represents the quality of the effluent discharged since August 1, 2003, (Table 7). The DMR data is also presented on graphs in Appendix C. The effluent is characterized as follows:

**Table 6 - Wastewater characterization reported in the application (sample collection date was October 12, 2006 and November 21, 2006 for the second TTO sample).**

| Parameter | Units | Concentration | Number of Samples |
|---|---|---|---|
| 5-day biochemical oxygen demand (BOD5) | Milligrams per liter (mg/L) | <1.0 | 1 |
| Total suspended solids (TDS) | mg/L | 9.00 | 1 |
| Ammonia-N | mg/L | 1.3 | 1 |
| Total oil and grease (O&G) | mg/L | <3.3 | 1 |
| Fluoride (total) | mg/L | 1.8 | 1 |
| Alkalinity | mg/L $CaCO_3$ | 50 | 1 |
| Antimony (total) | mg/L | <0.0050 | 1 |
| Arsenic (total) | mg/L | <0.0050 | 1 |

| Parameter | Units | Concentration | Number of Samples |
|---|---|---|---|
| Beryllium (total) | mg/L | <0.0050 | 1 |
| Cadmium (total) | mg/L | <0.0020 | 1 |
| Chromium (total) | mg/L | <0.010 | 1 |
| Copper (total) | mg/L | <0.010 | 1 |
| Lead (total) | mg/L | <0.0020 | 1 |
| Nickel (total) | mg/L | <0.0050 | 1 |
| Selenium (total) | mg/L | <0.050 | 1 |
| Silver (total) | mg/L | <0.0050 | 1 |
| Thallium (total) | mg/L | <0.0020 | 1 |
| Zinc (total) | mg/L | <0.050 | 1 |
| Base/neutral and acids by EPA Method 625 except bis(2-ethylhexyl)phthalate | mg/L | Not detected (ND) | 2 |
| Bis(2-ethylhexyl)phthalate | mg/L | 0.023 | 1 |
| Volatiles by GC/MS by EPA Method 624 except chloroform | mg/L | ND | 2 |
| Chloroform | mg/L | 0.0015<br>0.0017 | 2 |

**Table 7 - Wastewater characterization reported in the DMRs since August 2003.**

| Parameter | Units | Minimum value | Average value | Maximum value | Number of samples |
|---|---|---|---|---|---|
| Flow, monthly average | Gallons per day (gpd) | 4,914 | 7,595 | 19,649 | 75 |
| Flow, daily maximum | gpd | 5,925 | 13,411 | 36,937 | 75 |
| Fluoride (total), monthly average | mg/L | 0.7 | 3.2 | 19.0 | 75 |
| Fluoride (total), daily maximum | mg/L | 0.7 | 3.7 | 45.0 | 75 |
| pH, minimum | Standard Units (S.U.) | 5.6 | | 8.6 | 75 |
| pH, maximum | S.U. | 8.2 | | 10.9 | 75 |
| Total toxic organics (TTO), daily maximum | mg/L | Not detected (ND) | 0.020 | 0.130 | 13 |

## III. PROPOSED PERMIT CONDITIONS

State regulations require that Ecology base permit discharge limits on the:

- Technology and treatment methods available to treat specific pollutants (technology-based). Technology-based limits are set by the EPA and published as a regulation, or Ecology develops limits on a case-by-case basis (40 CFR 125.3, and RCW 90.48). Dischargers must treat wastewater using all known, available, reasonable methods of prevention, control, and treatment (AKART).

- Effects of the pollutants to the POTW (local limits). Wastewater must not interfere with the operation of the POTW.

- Applicable requirements of other local, state and federal laws.

Ecology applies the most stringent of these limits to each parameter of concern and further describes the proposed limits below.

The limits in this permit reflect information received in the application and from supporting reports (engineering, hydrogeology, monitoring, etc.). Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the State of Washington. Ecology does not develop effluent limits for all reported pollutants**.** Some pollutants are not treatable at the concentrations reported, are not controllable at the source, and are not listed in regulation.

Ecology does not usually develop permit limits for pollutants that were not reported in the permit application but that may be present in the discharge. The permit does not authorize the discharge of the non-reported pollutants. During the five-year permit term, the facility's effluent discharge conditions may change from those conditions reported in the permit application. The facility must notify Ecology if significant changes occur in any constituent. Industries may be in violation of their permit until the permit is modified to reflect additional discharge of pollutants.

### A. Technology-Based Effluent Limits

All waste discharge permits issued by Ecology must specify conditions requiring available and reasonable methods of prevention, control, and treatment (AKART) of discharges to waters of the state (RCW 90.48).

Existing federal categorical limits for similar facilities are found under 40 CFR Part 469 Subpart A and B. However, SLA is a R&D facility and EPA has determined that stand alone R&D facilities are not subject to categorical pretreatment standards. EPA documented this determination in a letter from the EPA Deputy Assistant Administrator for Water to AT&T Bell Laboratories on June 26, 1987. However, previously Ecology determined that these categorical pretreatment standards are technologically and economically achievable for R&D facilities. Ecology confirms that the categorical standards represent AKART for SLA.

Ecology approved the engineering report when the facility was built. Ecology determined the facility meets the minimum requirements demonstrating compliance with the AKART standard if the SLA operates the treatment and disposal system as described in the approved engineering report, any subsequent Ecology approved reports and permit application.

The following permit limits are necessary to satisfy the requirement for AKART:

**Table 8 - Technology Based Effluent Limits.**

| EFFLUENT LIMITS | | | |
|---|---|---|---|
| **Parameter** | **Units** | **Average Monthly** | **Maximum Daily** |

| | | | |
|---|---|---|---|
| Fluoride, total | mg/L | 17.4 | 32.0 |
| TTO | mg/L | | 1.37 |
| pH | Within the range 6.0 to 9.0 | | |

According to 40 CFR 469.13:

*In lieu of monitoring for TTO, the control authority may allow industrial users of POTWs to make the following certification as a comment to the periodic reports required by §403.12(e): "Based on my inquiry of the person or persons directly responsible for managing compliance with the pretreatment standard for total toxic organics (TTO), I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewaters has occurred since filing the last discharge monitoring report. I further certify that this facility is implementing the solvent management plan submitted to the control authority."*

*In requesting that no monitoring be required, industrial users of POTWs shall submit a solvent management plan that specifies to the control authority's satisfaction the toxic organic compounds used; the method of disposal used instead of dumping, such as reclamation, contract hauling, or incineration; and procedures for assuring that toxic organics do not routinely spill or leak into the wastewater.*

SLA submitted electronically the solvent management plan on September 30, 2009. SLA requested to make the above certification in lieu of monitoring for TTO. Ecology reviewed the plan and TTO monitoring data since August 2003 and approved the request.

**B. Effluent Limits Based On Local Limits**

To protect the city of Camas POTW from pass-through, interference, concentrations of toxic chemicals that would impair beneficial or designated uses of sludge, or potentially hazardous exposure levels, Ecology believes it is necessary to impose limits for certain parameters. Ecology based such limits on local limits established by the city of Camas POTW and codified in ordinance, Table 9.

**Table 9 - Local limits.**

| Parameter | Units | Limits |
|---|---|---|
| Temperature | Degree Fahrenheit (ºF) | 150 |
| Oil and Grease (O&G) | (mg/L | 100 |
| pH | | Within the range 5.5 to 9.0 |
| Five-day biochemical oxygen demand ($BOD_5$) | mg/L | 300 |
| Total suspended solids (TSS) | mg/L | 350 |

Ecology reviewed the available date and determined that a reasonable potential does not exist for SLA to exceed the above limits except pH; therefore only the pH local limit is considered further. In 2002 the city of Camas POTW authorized an upper pH limit of 11.0, because a higher pH discharge would benefit the biological treatment process. The upper pH limit of 11.0 is carried over to this permit.

**C. Comparison of Effluent Limits with Limits of The Previous Permit Issued on July 16, 2003.**

**Table 10 - Comparison of Effluent Limits.**

| | Basis of Limit | Previous Effluent Limits: Outfall # 001 | | Proposed Effluent Limits: Outfall # 001 | |
|---|---|---|---|---|---|
| **Parameter** | | **Average Monthly** | **Maximum Daily** | **Average Monthly** | **Maximum Daily** |
| Flow, gallons per day (gpd) | SLA request | 35,500 | 48,000 | 35,500 | 48,000 |
| Fluoride (total), mg/L | Technology | 17.4 | 32.0 | 17.4 | 32.0 |
| TTO, mg/L | Technology | | 1.37 | | 1.37 |
| pH | Technology/ POTW authorization | Within the range 5.5 to 11.0 | | Within the range 6.0 to 11.0 | |

## IV. MONITORING REQUIREMENTS

Ecology requires monitoring, recording, and reporting (WAC 173-216-110) to verify that the treatment process functions correctly and that the discharge complies with the permit's effluent limits.

Ecology details the proposed monitoring schedule under Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. Due to good performance SLA is allowed to submit the following certification with the monthly DMRs in lieu of monitoring for TTO:

*"Based on my inquiry of the person or persons directly responsible for managing compliance with the pretreatment standard for total toxic organics (TTO), I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewaters has occurred since filing the last discharge monitoring report. I further certify that this facility is implementing the solvent management plan submitted to the control authority."*

Quarterly monitoring of the following pollutants is added to the permit to further characterize the industrial wastewater discharge from the Facility:

- Sulfates.
- Total dissolved solids (TDS).
- Ammonia.
- Alkalinity.
- Arsenic, total.
- Cadmium, total.
- Chromium, total.
- Copper, total.
- Cyanide, total.
- Lead, total.
- Mercury, total.
- Nickel, total.
- Selenium, total.
- Silver, total.
- Zinc, total.

The quarterly monitoring of listed parameters is required in 2010 and 2011. The above listed pollutants are either reported present in the renewal application or/and are needed to derive local limits for the city of Camas POTW.

Ecology requires that facilities must use a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories* to prepare all monitoring data (with the exception of certain parameters).

## V. OTHER PERMIT CONDITIONS

### A. Reporting and Recordkeeping

Ecology based permit condition S3. on our authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-216-110 and CFR 403.12 (e),(g), and (h)).

### B. Operations and Maintenance

Ecology requires industries to take all reasonable steps to properly operate and maintain their wastewater treatment system in accordance with state regulations (WAC 173-240-150 and WAC 173-216-110). The facility must prepare and submit an operation and maintenance manual as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-150). Implementation of the procedures in the Operation and Maintenance Manual ensures the facility's compliance with the terms and limits in the permit.

### C. Prohibited Discharges

Ecology prohibits certain pollutants from being discharged to the POTW. These include substances which cause pass-through or interference, pollutants which may cause damage to the POTW or harm to the POTW workers (Chapter 173-216 WAC) and the discharge of designated dangerous wastes not authorized by this permit (Chapter 173-303 WAC).

### D. Dilution Prohibited

Ecology prohibits the facility from diluting its effluent as a partial or complete substitute for adequate treatment to achieve compliance with permit limits.

### E. Spill Plan

This facility stores a quantity of chemicals on-site that have the potential to cause water pollution if accidentally released. Ecology can require a facility to develop best management plans to prevent this accidental release [section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080].

SLA developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the facility to update this plan and submit it to Ecology.

### F. General Conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all State Waste Discharge permits issued by Ecology.

## VI. PUBLIC NOTIFICATION OF NONCOMPLIANCE

Ecology may annually publish a list of all industrial users in significant noncompliance with Pretreatment Standards or Requirements during any of the previous four quarters in a local newspaper. Accordingly, this permit condition informs the Facility that noncompliance with this permit may result in publication of the noncompliance.

## VII. PERMIT ISSUANCE PROCEDURES

### A. Permit Modifications

Ecology may modify this permit to comply with new or amended state or federal regulations.

### B. Proposed Permit Issuance

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limits and conditions believed necessary to control toxics. Ecology proposes that the permit be issued for five years.

## VIII. REFERENCES FOR TEXT AND APPENDICES

Washington State Department of Ecology.

Laws and Regulations( http://www.ecy.wa.gov/laws-rules/index.html )

Permit and Wastewater Related Information
(http://www.ecy.wa.gov/programs/wq/wastewater/index.html

## APPENDICES

### APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to reissuance a permit to Sharp Laboratories of America, Inc. The permit prescribes operating conditions and wastewater discharge limits. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on June 4, 2009, and June 11, 2009, in the *Columbian* to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology will place a Public Notice on date in the *Columbian* to inform the public and to invite comment on the proposed reissuance of this State Waste Discharge permit as drafted.

The Notice –

- Tells where copies of the draft Permit and Fact Sheet are available for public evaluation (a local public library, the closest Regional or Field Office, posted on our website.).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Asks people to tell us how well the proposed permit would protect the receiving water.
- Invites people to suggest fairer conditions, limits, and requirements for the permit.
- Invites comments on Ecology's determination of compliance with antidegradation rules.
- Urges people to submit their comments, in writing, before the end of the Comment Period
- Tells how to request a public hearing of comments about the proposed State Waste Discharge Permit.
- Explains the next step(s) in the permitting process.

Ecology has published a document entitled **Frequently Asked Questions about Effective Public Commenting** which is available on our website at http://www.ecy.wa.gov/biblio/0307023.html.

You may obtain further information from Ecology by telephone, 360-407-6280, or by writing to the permit writer at the address listed below.

Water Quality Permit Coordinator
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## APPENDIX B--GLOSSARY

**AKART**--The acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART is a technology-based approach to limiting pollutants from wastewater discharges which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

**Alternate Point of Compliance**--An alternative location in the ground water from the point of compliance where compliance with the ground water standards is measured. It may be established in the ground water at locations some distance from the discharge source, up to, but not exceeding the property boundary and is determined on a site specific basis following an AKART analysis. An "early warning value" must be used when an alternate point is established. An alternate point of compliance must be determined and approved in accordance with WAC 173-200-060(2).

**Ambient Water Quality**--The existing environmental condition of the water in a receiving water body.

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Annual Average Design Flow (AADF)**--The average of the daily flow volumes anticipated to occur over a calendar year.

**Average Monthly Discharge Limit**--The average of the measured values obtained over a calendar month's time.

**Background water quality**--The concentrations of chemical, physical, biological or radiological constituents or other characteristics in or of ground water at a particular point in time upgradient of an activity that has not been affected by that activity, [WAC 173-200-020(3)]. Background water quality for any parameter is statistically defined as the 95 percent upper tolerance interval with a 95 percent confidence based on at least eight hydraulically upgradient water quality samples. The eight samples are collected over a period of at least one year, with no more than one sample collected during any month in a single calendar year.

**Best Management Practices (BMPs)**--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

**$BOD_5$**--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The $BOD_5$ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Bypass**--The intentional diversion of waste streams from any portion of the collection or treatment facility.

**Categorical Pretreatment Standards**--National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

**Compliance Inspection - Without Sampling**--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

**Compliance Inspection - With Sampling**--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations. In addition it includes as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Ecology may conduct additional sampling.

**Composite Sample**--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

**Construction Activity**--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

**Continuous Monitoring**--Uninterrupted, unless otherwise noted in the permit.

**Distribution Uniformity**--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

**Early Warning Value**--The concentration of a pollutant set in accordance with WAC 173-200-070 that is a percentage of an enforcement limit. It may be established in the effluent, ground water, surface water, the vadose zone or within the treatment process. This value acts as a trigger to detect and respond to increasing contaminant concentrations prior to the degradation of a beneficial use.

**Enforcement limit**--The concentration assigned to a contaminant in the ground water at the point of compliance for the purpose of regulation, [WAC 173-200-020(11)]. This limit assures that a ground water criterion will not be exceeded and that background water quality will be protected.

**Engineering Report**--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Ground water –** Water in a saturated zone or stratum beneath the surface of land or below a surface water body.

**Grab Sample**--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

**Industrial User**--A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

**Industrial Wastewater**--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

**Interference**--A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

**Local Limits**--Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

**Maximum Daily Discharge Limit**--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Maximum Day Design Flow (MDDF)** --The largest volume of flow anticipated to occur during a one-day period, expressed as a daily average.

**Maximum Month Design Flow (MMDF)**--The largest volume of flow anticipated to occur during a continuous 30-day period, expressed as a daily average.

**Maximum Week Design Flow (MWDF)**--The largest volume of flow anticipated to occur during a continuous 7-day period, expressed as a daily average.

**Method Detection Level (MDL)**--The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

**pH**--The pH of a liquid measures its acidity or alkalinity. It is the negative logarithm of the hydrogen ion concentration. A pH of 7.0 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

**Pass-through**--A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

**Peak Hour Design Flow (PHDF)**--The largest volume of flow anticipated to occur during a one-hour period, expressed as a daily or hourly average.

**Peak Instantaneous Design Flow (PIDF)**--The maximum anticipated instantaneous flow.

**Point of Compliance**--The location in the ground water where the enforcement limit shall not be exceeded and a facility must be in compliance with the Ground Water Quality Standards. It is determined on a site specific basis and approved or designated by Ecology. It should be located in the ground water as near and directly downgradient from the pollutant source as technically, hydrogeologically, and geographically feasible, unless an alternative point of compliance is approved.

**Potential Significant Industrial User**--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 percent of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

Ecology may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

**Quantitation Level (QL)**--A calculated value five times the MDL (method detection level).

**Reasonable Potential**--A reasonable potential to cause a water quality violation, or loss of sensitive and/or important habitat.

**Significant Industrial User (SIU)**--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

**Slug Discharge**--Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate which may cause interference with the POTW.

**Soil Scientist**--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

**Solid waste**--All putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials.

**Soluble $BOD_5$** --Determining the soluble fraction of Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of soluble organic material present in an effluent that is utilized by bacteria. Although the soluble BOD test is not specifically described in Standard Methods, filtering the raw sample through at least a 1.2 um filter prior to running the standard $BOD_5$ test is sufficient to remove the particulate organic fraction.

**State Waters**--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Stormwater**--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

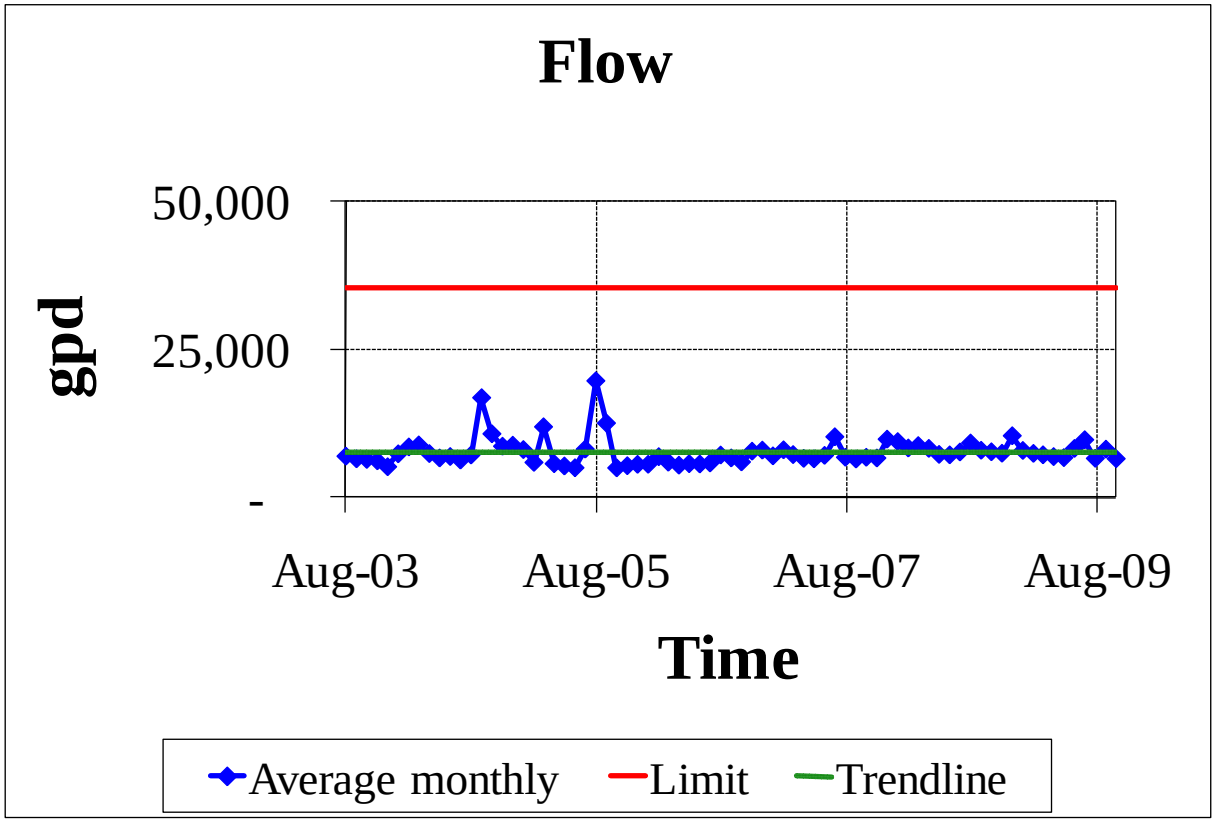
**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

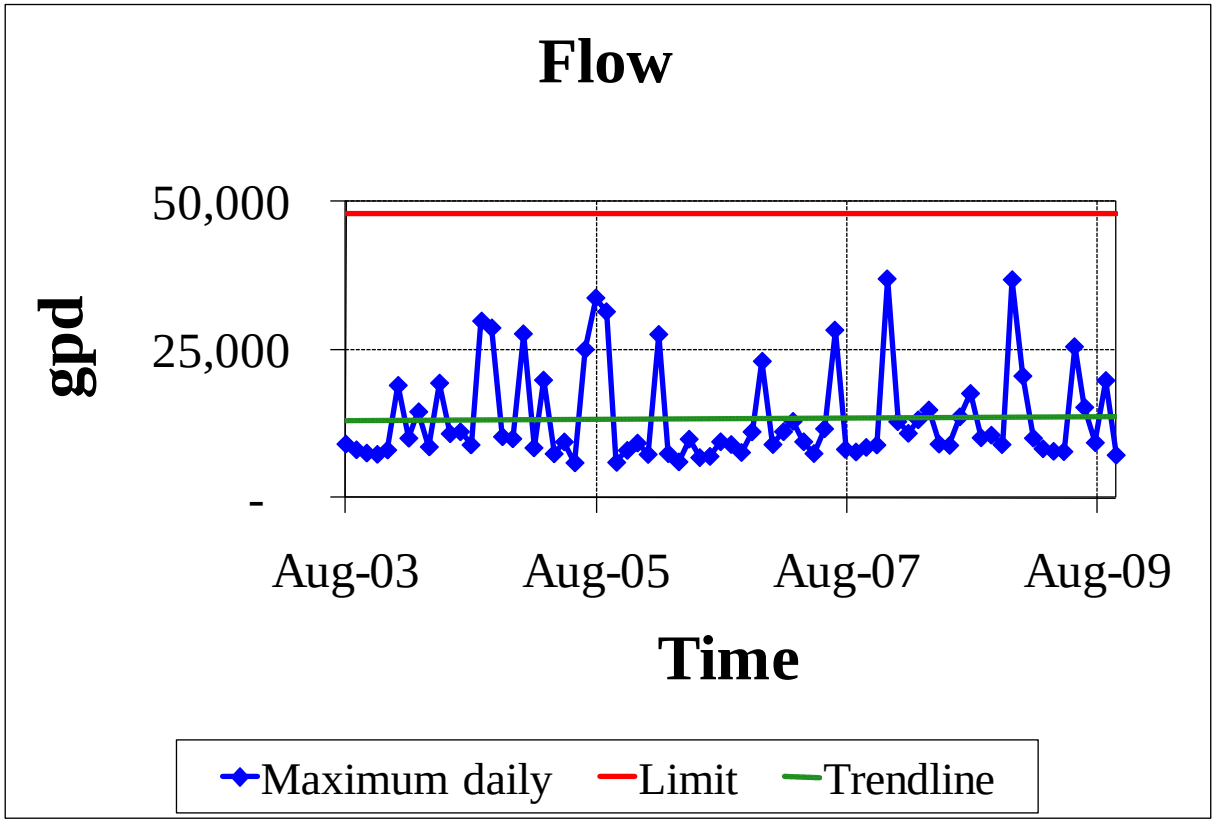
**Total Coliform Bacteria**--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

**Total Dissolved Solids**--That portion of total solids in water or wastewater that passes through a specific filter.

**Total Suspended Solids (TSS)**--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

**Water Quality-based Effluent Limit**--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.


Flow
50,000
25,000
-
gpd
Aug-03
Aug-05
Aug-07
Aug-09
Time
Average monthly
Limit
Trendline


Flow
50,000
25,000
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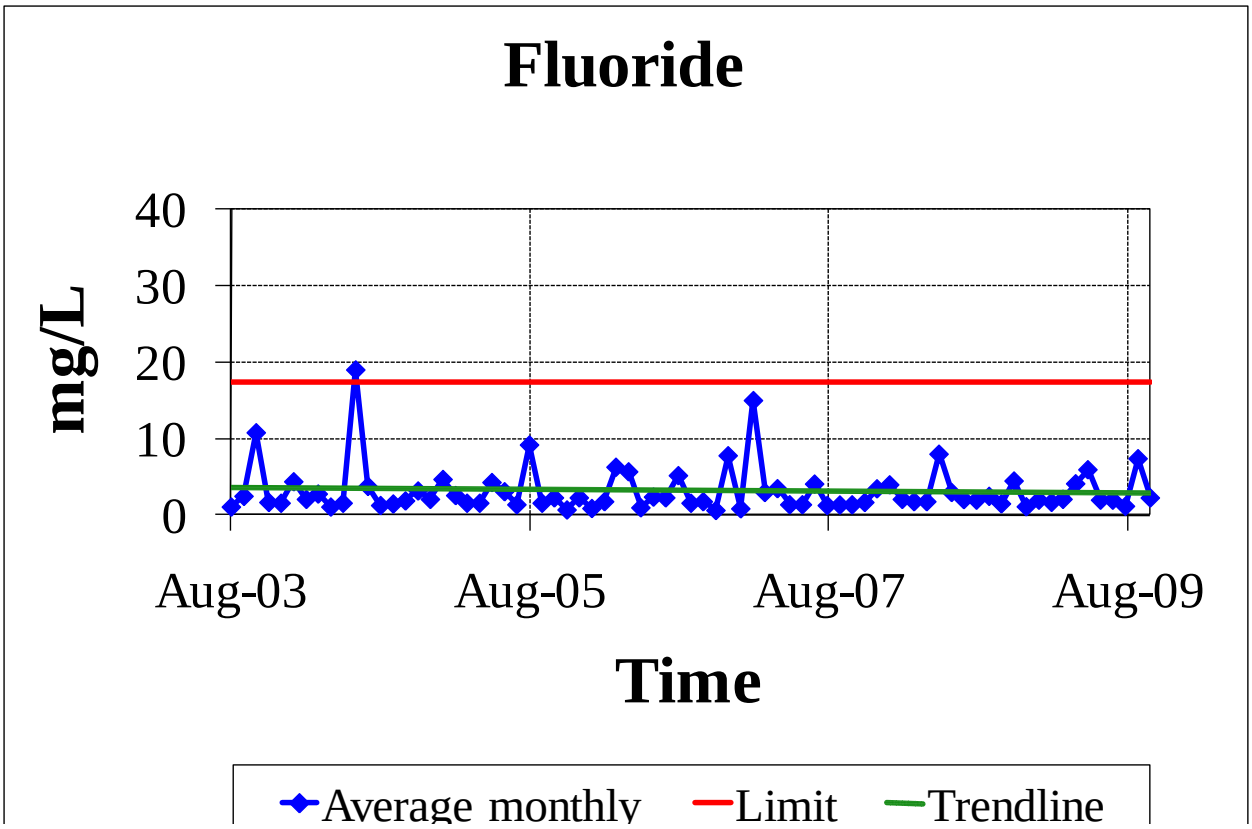
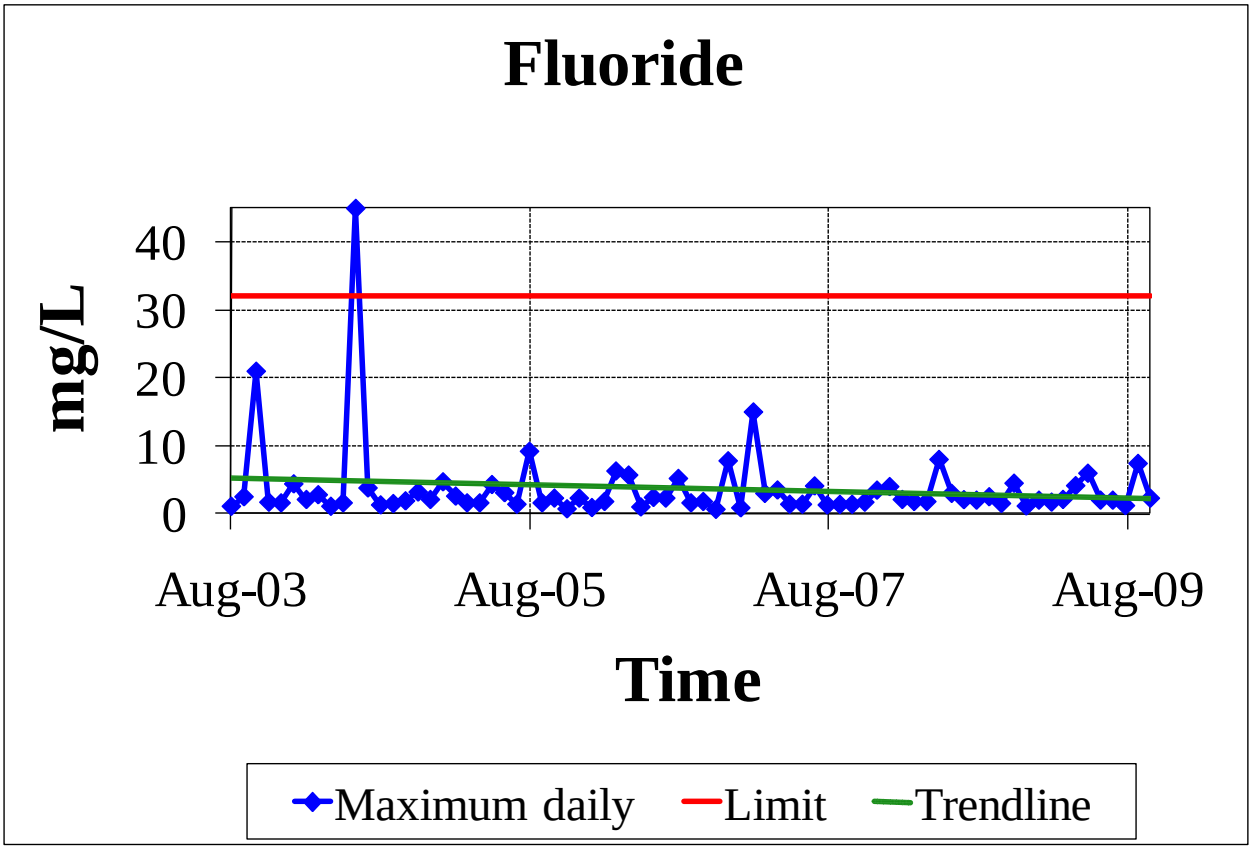
gpd
Aug-03
Aug-05
Aug-07
Aug-09
Time
Maximum daily
Limit
Trendline


Fluoride
mg/L
40
30
20
10
0
Aug-03
Aug-05
Aug-07
Aug-09
Time
Average monthly
Limit
Trendline


Fluoride
mg/L
40
30
20
10
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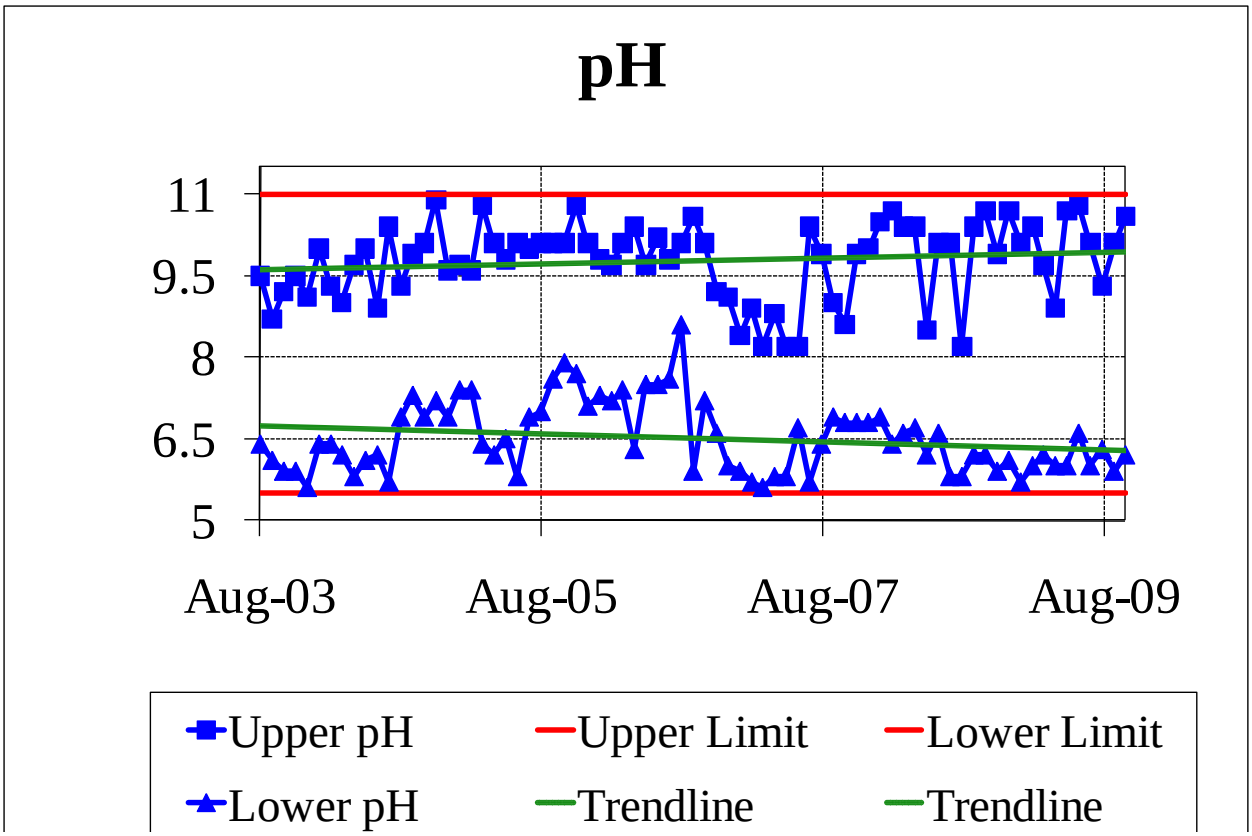
Aug-03
Aug-05
Aug-07
Aug-09
Time
Maximum daily
Limit
Trendline


pH
11
9.5
8
6.5
5
Aug-03
Aug-05
Aug-07
Aug-09
Upper pH
Upper Limit
Lower Limit
Lower pH
Trendline
Trendline

## APPENDIX D—RESPONSE TO COMMENTS